

Appl. No. 10/787,296
Reply to Office Action of January 29, 2008

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REMARKS/ARGUMENTS

35 U.S.C. § 103 Claim Rejections

In paragraph 3 of the Office Action, the Examiner rejects claims 1, 3 to 7, 9, 11 to 15 and 19 to 22 under 35 U.S.C. § 103(a) as being unpatentable over Silver (U.S. Patent No. 6,560,457) in view of Boudreau et al (U.S. Patent No. 5,369,681). Please note that although the Examiner indicates in paragraph 3 that claim 8 is also rejected under 35 U.S.C. § 103(a) as being unpatentable over Silver in view of Boudreau et al, no details of the rejection of claim 8 are provided based on only Silver and Boudreau et al, and the Examiner relies on an additional reference to reject claim 8 in a subsequent paragraph, as noted below. Accordingly, Applicant believes that the Examiner did not intend to refer to claim 8 in paragraph 3 of the Office Action.

In paragraph 4 of the Office Action, the Examiner rejects claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Silver in view of Boudreau et al and further in view of Haumont (U.S. Patent Application Publication No. US 2004/0102199 A1).

In paragraph 5 of the Office Action, the Examiner rejects claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Silver in view of Boudreau et al and further in view of Belkin et al (U.S. Patent No. 6,151,501).

In paragraph 6 of the Office Action, the Examiner rejects claims 10 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Silver in view of Boudreau et al and further in view of Krebs et al (U.S. Patent No. 5,548,631).

Applicant respectfully traverses these rejections for reasons stated below.

The law on obviousness under 35 U.S.C. 103 was recently addressed in *KSR Int'l v. Teleflex, Inc.*, No. 04-1350, slip op. at 14 (U.S., Apr. 30, 2007). Following this, examination guidelines were released on October 10, 2007 in regards to determining obviousness under 35 U.S.C. 103. According to these guidelines, the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.* 383 U.S.

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1,148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries. The factual inquiries enunciated by the Court are as follows:

- (1) Determining the scope and content of the prior art;
- (2) Ascertaining the differences between the claimed invention and the prior art; and
- (3) Resolving the level of ordinary skill in the pertinent art.

The Graham factors, including secondary considerations when present, are the controlling inquiries in any obviousness analysis. Once the findings of fact are articulated, Office personnel must provide an explanation to support an obviousness rejection under 35 U.S.C. 103. According to *KSR*, for the Patent Office to properly combine references in support of an obviousness rejection, the Patent Office must identify a reason why a person of ordinary skill in the art would have sought to combine the respective teachings of the applied references.

Applicant's analysis below demonstrates that the Examiner has failed to properly conform to the aforementioned guidelines for a finding of obviousness under 35 U.S.C. 103.

Independent Claims 1 and 19

Applicant respectfully submits that independent claims 1 and 19 of the present application are patentable over Silver and Boudreau et al, as the findings of fact as articulated by the Examiner are inaccurate. In particular, the Examiner has not properly determined (i) the scope of the prior art nor (ii) the differences between the claimed invention and the prior art. Furthermore, the Examiner has not provided a valid explanation to support an obviousness rejection under 35 U.S.C. 103. Applicant's reasoning is detailed below.

Determining The Scope Of The Prior Art

Silver

With respect to claim 1, the Examiner concedes that Silver does not explicitly disclose the feature wherein the first location information is determined independently from the second location information, and the second location information is determined independently from the

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first location information, as recited in claim 1.

Similarly, with respect to claim 19, the Examiner concedes that Silver does not explicitly disclose the independently determined first location information and the independently determined second location information of a mobile station within a first network and a second network, respectively, as recited in claim 19.

Applicant agrees that Silver fails to teach or even suggest the foregoing features.

However, with reference to claim 1, the Examiner asserts that Silver teaches "transmitting a first page on a first network to an area that is **an intersection between locations defined by the first location information** pertaining to the first network **and the second location information** pertaining to a second network" (emphasis added), and with reference to claim 19, the Examiner asserts that Silver teaches "**processing the second location information with first location information** of the mobile device within the first network **to generate intersection information** [and] wherein the service controller is adapted to **send the page to paging locations as a function of the intersection information**" (emphasis added). The Examiner has pointed to columns 7 and 8 and Figure 2 of Silver in support of these assertions. With specific reference to Figure 2 and the accompanying description in columns 7 and 8 of Silver, location information in a Packet Switched (PS) data network is mapped to a Circuit Switched (CS) voice network in order to set up a call in the CS voice network (e.g. in Figure 2, location of Mobile Terminal (MT) 131 mapped to region A, location of MT 132 mapped to region B).

It is readily apparent that Silver does not make use of location information for the MT 131 in region A nor the location information for the MT 132 in region B to determine an intersection between the location information from the PS network (region D) and location information from the CS network (region A/B). Silver merely uses the location information from the PS network to page ALL locations in the CS network that are consistent with the location information from the PS network. See for example Figure 2, where location of MT 131 is mapped to ALL of region A, location of MT 132 is mapped to ALL of region B. There is no set of locations to page that is smaller than that defined at the outset by the PS network. In fact, the set of locations is larger. In the PS network, the MT is "camped" on a particular BSS, and as

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such, the PS network knows precisely where the MT is located. In the CS network, the entire region A is used to set up a CS call for the MT 131, which potentially realizes some savings in the CS network, since only region A need be paged, rather than all of regions A, B and C. In the absence of the information from the PS network, the CS network has no idea where a MT is located.

In view of the foregoing, Applicant submits that the Examiner has not properly determined the scope of Silver.

Boudreau et al

The Examiner has pointed to column 5, line 55 to column 6, line 10 of Boudreau et al in support of the assertion that "Boudreau further discloses wherein first location information is determined independently from second location information and the second location information is determined independently from the first location information (i.e., first location information is **based on the area the mobile was last known to be in communication with the system** and the second location information is **based on location information found in a look-up table**" (emphasis added). The look-up table merely defines a hierarchy that organizes groups of cells into location areas, and groups of location areas into paging areas. The Examiner fails to recognize that the "second location information" retrieved from the look-up table according to the teachings of Boudreau et al **is totally dependent on** the last known area in which the mobile was in communication with the system, which the Examiner has alleged constitutes "the first location information". This dependence is clearly established by the portion of Boudreau et al that the Examiner has specifically relied on, which states:

"In still another aspect, the present invention includes a system for paging mobile stations within a cellular telecommunications system in which **groups of cells are arranged in location areas** and **groups of location areas are arranged in paging areas**. A call request for a desired mobile station is received from a calling party, the **location area within which the desired mobile station last registered is determined** and a page request is sent to the location area. The calling party is connected to the mobile station if a page response is received from the mobile station in response to the

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page request. If both paging area paging and service area paging is not enabled for the system and a page response is not received from the mobile station in response to the page request the calling party is informed that the mobile station is not available. If paging area paging is enabled for the system, **the paging area which is associated with the location area where the mobile station last registered is determined. Next, a list of a plurality of location areas defined by the paging area is determined** and a page request is sent to the plurality of location areas within the paging area." (See column 5, line 56 to column 6, line 10; Emphasis added).

In other words, a first page is sent to the last registered location area of a mobile station, and if no response is received, a second page is sent to all members of the paging area that includes the last known location area of the mobile, i.e., the second page is sent to other location areas that are associated with the location area where the mobile station was last registered. Clearly the Examiner is mistaken in asserting that Boudreau et al teaches the feature wherein the first location information is determined independently from the second location information, and the second location information is determined **independently** from the first location information.

Ascertaining The Differences Between The Prior Art And The Claims At Issue

Independent claims 1 and 19 recite:

1. A method of paging a mobile station in a communications system comprising at least two networks, the method comprising:

determining first location information defining a location of the mobile device in a first network;

determining second location information defining a location of the mobile device in a second network;

wherein the first location information is determined independently from the second location information, and the second location information is determined independently from the first location information, the method further comprising:

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transmitting a first page on a first network to an area that is an intersection between locations defined by the first location information pertaining to the first network and the second location information pertaining to a second network.
(emphasis added)

19. A communications system comprising at least two networks, the system comprising:

a service controller for sending a page over a first network of the system; and

an internetwork overlap determiner/exchanger for:

a) receiving from a second network of the system second location information of a mobile device within the second network determined independent of first location information of the mobile device with the first network; and

b) processing the second location information with first location information of the mobile device determined independent of the second location information of the mobile device within the second network within the first network to generate intersection information;

wherein the service controller is adapted to send the page to paging locations as a function of the intersection information. (emphasis added)

Silver

As noted above, the Examiner concedes that Silver does not explicitly disclose independently determining the first location information and the second location information. Silver teaches only using location from a first network to set up a call to a mobile terminal on a second network by mapping the location information from the first network to the second network. Also, as noted above, Silver does not make use of location information from the CS network and location information from the CS network to page a mobile terminal in an area that is an intersection between locations defined by the first location information and the second

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location information. Silver merely uses the location information from the PS network to page ALL locations in the CS network that are consistent with the location information from the PS network. See for example Figure 2, where location of MT 131 is mapped to ALL of region A, location of MT 132 is mapped to ALL of region B.

In contrast, Applicant's claims 1 and 19 involve combining independently determined location information from two networks in order to narrow down where to send a page. Using the Figure 2 of Silver as an example, this would involve determining the location in the PS network (e.g. somewhere within coverage area D of data network 120), determining the location within the CS network (e.g. region B), and then determining which locations within the CS network are consistent with BOTH locations. In the illustrated example, there are only two CS BTSs that would be consistent with both of these regions. Thus, a further savings, beyond that realized in Silver, is realized - namely rather than transmitting to all of region B, a subset of region B is transmitted to.

Silver never makes use of independently determined location information for the CS network. Rather, PS location information is simply mapped to CS location information. Because there is a direct mapping, there is no concept of an intersection of two independently defined areas.

Boudreau et al

The Examiner has pointed to column 5, line 56 to column 6, line 10 of Boudreau et al in support of the rejection of independent claims 1 and 19, alleging that "Boudreau et al further discloses wherein first location information is determined independently from second location information and the second location information is determined independently from the first location information (i.e., first location information is **based on the area the mobile was last known to be in communication with the system** and the second location information is **based on location information found in a look-up table**" (emphasis added). As noted above, the look-up table disclosed by Boudreau et al merely associates groups of cells into location areas and groups of location areas into a paging area, so that if a mobile terminal does not respond to a page in its last known location area, the page can then be sent out to other location areas that are

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part of the same paging area as the last known location area. Clearly, even if the last known location area is considered "first location information", the location information in the look-up table which associates the last known location area with a group of other location areas in a paging area cannot be considered "second location information" that is determined independently from the last known location area, as the last known location area is the criteria used to select information from the look-up table.

Furthermore, Boudreau et al is directed to paging within a single network and does not teach or even suggest "transmitting a first page on a first network to an area that is an intersection between locations defined by the first location information pertaining to the first network and the second location information pertaining to a second network" (emphasis added), as recited in independent claim 1. According to Boudreau et al, the last known location area in which a mobile terminal was registered is paged when a page request for the mobile terminal is received, and if the mobile terminal does not respond to that page, subsequently paging all of the location areas that are associated with the same paging area as the last known location area in an attempt to locate the mobile terminal. Boudreau et al does not make use of the location information in the look-up table, i.e., the other location areas that are part of the same paging area as the last known location area, when first paging the mobile terminal in its last known location area. Rather, the first page is merely sent to the last known location area, and the look-up table is only utilized to generate a second page to the other location areas if the mobile terminal does not respond to the first page.

In view of the foregoing, Applicant submits that the Examiner has not properly determined the differences between the claimed invention and the prior art. Therefore, the findings of fact as articulated by the Examiner are improper.

Explanation To Support An Obviousness Rejection

As noted above, for the Patent Office to properly combine references in support of an obviousness rejection, the Patent Office must identify a reason why a person of ordinary skill in the art would have sought to combine the respective teachings of the applied references. The examination guidelines indicate that "The key to supporting any rejection under 35 U.S.C. 103 is

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the clear articulation of the reason(s) why the claimed invention would have been obvious." The Court quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." Applicant appreciates that the Examiner has articulated a reason why the claimed invention would have been obvious. However, for reasons detailed below, the Examiner's articulated reason can not be regarded as being valid.

As noted earlier, the Examiner concedes that Silver does not explicitly disclose independently determining first location information within a first network and second location information within a second network. While Silver may disclose mapping location information from a PS network to location information in a CS network in order to page ALL locations in the CS network that are consistent with the location information from the PS network, there is no set of locations to page that is smaller than that defined at the outset by the PS network. In fact, the set of locations is larger. In the PS network, the MT is "camped" on a particular BSS, and as such, the PS network knows precisely where the MT is located. In the CS network, the entire region A is used to set up a CS call for the MT 131. This explicitly teaches away from the present invention, as it makes no use of location information in the first (CS) network and location information in the second (PS) network to determine an area of intersection between locations defined by the first location information and the second location information. Since the location information of the MT in the CS network is a mapping of the location information of the MT in the PS network, any intersection information generated would correspond to the location information of the MT in the PS network, which would in turn correspond to the location information of the MT in the CS network. Since such intersection information would provide no new information, there would be no purpose in computing intersection information using the location information of the MT in the PS network and the location information of the MT in the CS network.

Similarly, the look-up table or other means of associating location areas into paging areas taught by Boudreau et al merely defines an association between a last known location area and other location areas in a paging area. Even if the last known location area is considered "first

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location information", the other location areas that are part of the same paging area as the last known location area cannot be considered "second location information" that is determined independently of the first location information. Furthermore, the last known location area identified in the "first location information" is a member of the paging area defined by the "second location information" provided by the look-up table, and therefore there would be no point in determining an intersection between the last known location area and its associated paging area, as Boudreau et al. teaches that the first page is simply sent to the location identified by the "first location information", i.e., the last known location area.

As such, Applicant respectfully submits that one skilled in the art would see no reason to modify the teachings of Silver based on the teachings of Boudreau et al, and moreover, doing so would not allow one skilled in the art to arrive at the present invention.

Furthermore, Applicant respectfully submits that one skilled in the art would have no reason to expect that modifying Silver with the teachings of Boudreau et al. would "more accurately determin[e] the location of a mobile station". Firstly, it is not readily apparent how one skilled in the art would even modify Silver with the teachings of Boudreau et al, which merely describes paging a mobile terminal according to a hierarchy of location areas, paging areas and service areas, whereby mobile terminals are first paged in their last known location areas and then at successively higher levels of the hierarchy until located. The locations involved in each successive round of paging in Boudreau is dependent on the location(s) in the previous round, i.e., the last known location area is paged, then all location areas grouped in the same paging area as the last known location area, and then all paging areas in the service area. As established above, neither Silver nor Boudreau et al. teaches sending a first page to an area of intersection between locations defined by independently determined first location information and second location information. Therefore, no combination of Silver and Boudreau et al would result in "more accurately determining the location of a mobile station", contrary to the Examiner's assertion. Accordingly, the Examiner's reason to combine Silver and Boudreau et al fails to satisfy the requirements set out in the Supreme Court's ruling in *KSR Int'l v. Teleflex, Inc.*

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Furthermore, Applicant notes that even if the Patent Office is able to articulate and support a suggestion to combine the references, it is impermissible to pick and choose elements from the prior art while using the application as a template—see *In re Fine*, 837 F.3d 1071 (Fed. Cir. 1988). It is respectfully submitted that incorporating the teachings of Silver in relating to paging using only location information from a first network mapped to location information in a second network with the teachings of Boudreau et al in relating to a paging hierarchy of successively larger areas for paging, is an attempt to arrive at claims 1 and 19 while using the present application as a template. This attempt is flawed because the Examiner's proposed modifications do not account for the fact that Silver and Boudreau fail to teach the claimed features identified above.

If one were to use the present application as a template, which is nonetheless improper according to *In re Fine*, one would have to first modify Silver so that it teaches Applicant's claimed "transmitting a first page on a first network to an area that is an intersection between locations defined by the first location information pertaining to the first network and the second location information pertaining to a second network" (claim 1 and similar recitation in claim 19), and would have to modify Boudreau et al so that it teaches Applicant's claimed feature "wherein the first location information is determined independently from the second location information, and the second location information is determined independently from the first location information" (claim 1 and similar recitation in claim 19), as opposed to simply teaching first paging a location area and then other location areas of the same paging area, as described above. These numerous modifications cannot be regarded as obvious because the gap between the prior art and the claimed invention is too great. Applicant notes that the aforementioned examination guideline that issued on October 10, 2007 indicates that "the gap between the prior art and the claimed invention may not be 'so great' as to render the [claim] non-obvious to one reasonably skilled in the art." Therefore, the proposed combination of Silver and Boudreau et al cannot render the present application obvious.

In view of the foregoing, Applicant respectfully submits that claims 1 and 19 are both novel and inventive over the cited references, both alone and in combination.

By virtue of their claim dependencies on one of the independent claims, Applicant further

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submits that dependent claims 2 to 18 and 20 to 22 are novel, and also inventive, over the cited references for at least the same reasons.

Dependent Claim 2

The Examiner acknowledges that Silver and Boudreau et al fail to teach "transmitting a second page on the second network to an area defined by second location information pertaining to the second network and first location information pertaining to the first network", as recited in claim 2. However, the Examiner points to paragraph 53 of Haumont in support of the rejection of claim 2, alleging that Haumont teaches "a 3G SGSN is preferably adapted to have a configuration giving the 2G SGSN IP address for each routing area (or in alternative implementations, location area); the 2G SGSN is adapted to receive the paging request 204 and use the information contained therein to send a paging request 208 to the BSC". Applicant respectfully submits that even from the Examiner's own argument, it should be clear that Haumont teaches that an identification of the paging area is transmitted to the 2G SGSN 102 from the 3G SGSN 104 by means of the paging request 204. Accordingly, Applicant submits that the page transmitted on the 2G SGSN 102 is in response to the page command 204, and that the page is transmitted to an area defined by location information provided by the 3G SGSN 104 (See paragraphs 50 to 53 of Haumont). Therefore, Haumont teaches that the page is transmitted on the 2G network to an area defined by single location information, and not "first location information" and "second location information", as recited in claim 2.

In addition to failing to teach the particular feature alleged by the Examiner, Haumont fails to overcome the deficiencies in Silver and Boudreau et al identified above. Therefore, Applicant respectfully submits that the claimed invention is both novel and inventive over Silver, Boudreau et al and Haumont, both alone and in combination.

In view of the foregoing, Applicant respectfully submits that dependent claim 2 of the present application is patentable over Silver, Boudreau et al and Haumont, as the findings of fact as articulated by the Examiner are inaccurate.

Dependent claim 8

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The Examiner acknowledges that Silver and Boudreau et al fail to teach or even suggest the claimed feature "wherein each transmitter for a cell of the first network is co-located with a transmitter for a corresponding co-extensive cell of the second network, and wherein each transmitter for the cell of the first network and the transmitter for the corresponding co-extensive cell of the second network share an antenna", as recited in claim 8.

The Examiner points to the two communications services provided by the base site 114 to the communication unit 118 shown in Figure 1 and described in column 3 of Belkin et al. in support of the rejection of claim 8. However, Belkin et al. fails to overcome the deficiencies in Silver and Boudreau et al identified above, and therefore Applicant respectfully submits that no combination of Silver, Boudreau et al and Belkin et al would allow one skilled in the art to arrive at the present invention.

In view of the foregoing, Applicant respectfully submits that dependent claim 8 of the present application is patentable over Silver, Boudreau et al and Belkin et al, as the findings of fact as articulated by the Examiner are inaccurate.

Dependent Claims 10 and 16

The Examiner acknowledges that Silver and Boudreau et al fail to teach or even suggest the claimed features "wherein the first network is an interconnect network, the second network is a dispatch network, and wherein the first location information comprises a location area identifier identifying a location area having a first associated set of cells within the first network within which a mobile device is expected to be located, and the second location information comprises a dispatch area identifier identifying a dispatch location area having a second associated set of cells within which a mobile device is expected to be located" (claim 10) and "wherein the second network is an interconnect network, and the first network is a dispatch network" (claim 16).

The Examiner points to Figure 1 and column 2 of Krebs et al in support of the rejection of claims 10 and 16, alleging that the teachings of Krebs et al. render the foregoing features obvious. While Krebs et al. may teach a communications system that supports two communication services, such as cellular telephone services and trunked dispatch services, by sharing some, but not all, of the system infrastructure (See the Abstract of Krebs et al), Krebs et

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al fails to overcome the deficiencies in Silver and Boudreau et al identified above. Accordingly, Applicant submits that claims 10 and 16 are both novel and inventive over Silver, Boudreau et al and Krebs et al, both alone and in combination.

In view of the foregoing, Applicant respectfully submits that dependent claims 10 and 16 of the present application are patentable over Silver, Boudreau et al and Krebs et al, as the findings of fact as articulated by the Examiner are inaccurate.

Applicant respectfully requests that the Examiner reconsider and withdraw the rejections under 35 U.S.C. § 103(a).

Allowable Subject Matter

Applicant appreciates the Examiner's acknowledgement in paragraph 7 of the Office Action that claims 11, 17 and 18 recite novel and inventive subject matter. Please note that claims 11, 17 and 18 are also indicated as being "objected to" rather than "rejected" on Office Action Summary cover page. However, Applicant notes that in paragraph 3 and on page 5 of the Office Action the Examiner appears to have rejected claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Silver in view of Boudreau et al. Applicant respectfully requests that the Examiner correct this discrepancy and clearly indicate which claims are considered allowable.

In view of the foregoing, early favorable consideration of this application is earnestly solicited.

Respectfully submitted,

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